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ABSTRACT

This multi-method study explored how children conceptualize emergent leadership in collaborative learning groups, and whether emergent leadership was associated with student achievement motivation. Fourth and fifth grade students participated in a collaborative math activity. After the group math task, 294 students were surveyed on their achievement orientation and emergence of leadership. Within their learning groups, a subset of 18 students was individually interviewed. The interview data revealed that elementary school- aged children are aware of the emergence of leadership in collaborative learning groups, describing leadership behaviors in two domains: task-focused and relationship-focused. The survey data revealed that while task-focused leadership was only associated with performance goal orientations. Relationships-focused leadership was associated with both mastery and performance goals, though the association was stronger with mastery goals. Taken together, this study shows the importance of including emergent leadership in the study of collaborative learning groups. (Contains 39 references.) (Author)

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A Multi-Method Study of Children's Emergent Leadership in Collaborative Learning Groups

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Abstract

This multi-method study explored how children conceptualize emergent leadership in collaborative learning groups, and whether emergent leadership was associated with student achievement motivation. Fourth and fifth grade students participated in a collaborative math activity. After the group math task, 294 students were surveyed on their achievement orientation and emergence of leadership. Within their learning groups, a subset of 18 students was individually interviewed. The interview data revealed that elementary school-aged children are aware of the emergence of leadership in collaborative learning groups, describing leadership behaviors in two domains: task-focused and relationship-focused. The survey data revealed that while task-focused leadership was only associated with performance goal orientations. Relationship-focused leadership was associated with both mastery and performance goals, though the association was stronger with mastery goals. Taken together, this study shows the importance of including emergent leadership in the study of collaborative learning groups.

A Multi-Method Study of Children's Emergent Leadership in Collaborative Learning Groups

While the potential benefits of collaborative learning has been well documented (Johnson & Johnson, 1987; Slavin, Madden, Dolan, & Wasik, 1995), group learning is often difficult to navigate socially. Groups can have problems with social loafers (Shepperd, 1993) and dominators (Yamaguchi, 2001), which can result in inequities in learning (Webb, Nemer, Chizhik, & Sugrue, 1998). To address the negative aspects of collaboration, some observers might suggest the need for imposing strong formalized "leadership," perhaps in this case by the teacher, while other observers suggest teaching students to take on certain roles, such as the note taker and thinker (Cohen, 1986). However, imposing formalized leadership or roles may reduce the participants to "pawns" (deCharms, 1992) and discourage a personal investment and continuing interest in learning (Maehr, 1976). In more practical terms, it not only moves the responsibility for learning from the student to the teacher but also effectively undermines the peer-collaborative nature of the activity. Ideally, educators have hoped and trusted that collaborative learning groups could operate effectively on their own.

Research on adult groups suggests that groups can effectively operate and function on their own when there is an emergence of leadership behaviors and roles. Specifically, there are two types of leadership behaviors that help the group process. Task-focused leadership refers to accomplishing the task at hand, while relationship-related leadership refers to building strong working relationships and affiliations (Stogdill, 1969; Stogdill & Coons, 1957). Research on adults have consistently found that groups often can and do work effectively without any appointed or elected formal leader (Borg, 1957; Chemers, 2000; Cohen, Chang, & Ledford, 1997; Hare & O'Neill, 2000). They do so as various members of the group enact leadership behaviors, which contribute to effective group functioning (Neubert, 1999). For example, in

undergraduate discussion groups, Bormann (1990) found that emergent leadership was an important aspect in the group dynamics and group effectiveness of leaderless groups. Specifically, he found that groups that did not establish a leader were less effective in their discussions than groups that did establish a leader.

However, emergent leadership has often been studied in adult work groups (Guastello, 1995; Wheelan & Kaeser, 1997), experimental undergraduate groups (Hare & O'Neill, 2000; Lord, Phillips, & Rush, 1980), and military groups (Borg, 1957), with little attention to children's emergent leadership (Edwards, 1994; French & Stright, 1991; Yamaguchi, 2001). Given that in adult groups, emergent leadership is associated with positive group outcomes, better understanding children's emergent leadership may enhance our understanding and improve the effectiveness of collaborative learning groups.

Hence, the purpose of this study is two-fold. Using student interview data, the first part of the study will focus on children's conceptualizations and definitions of emergent leadership in collaborative learning groups. With so little attention to children's notion of emergent leadership, it is important to determine whether the conceptualizations of emergent leadership can be applied to elementary school-aged children. Using student survey data, the second part of the study will focus on self-perceptions of emergent leadership behaviors and their associations with student motivation, gender, and group compositions. Because children are often in an achievement setting, it is important to ascertain whether student achievement orientation matter in the emergence of leadership.

Research Questions

In the study we report here, we specifically build on the previous research on emergent leadership as we first explore how children conceptualize emergent leadership, and second

examine student gender, motivations, and group compositions as children work in differentially composed 3-person learning groups in their own classroom with their teacher present. As will be described in detail later, the design of the study was in many ways similar to what is done in many classrooms employing cooperative learning principles. Specifically, roles were not assigned when a general task was given to the students who were to work collaboratively in a "group planning" activity involving basic mathematical as well as interpersonal skills.

Utilizing interview data from 18 students, we explore the following research question.

Research Question 1: How do children define and describe emergent leadership in a collaborative learning group setting?

Utilizing self-reported survey data from 294 students, the analyses are directed toward answering two research questions.

Research Question 2: Are gender, achievement orientations, and group compositions associated with task-focused emergent leadership?

Research Question 3: Are gender, achievement orientations, and group compositions associated with relationship-focused emergent leadership?

Method

Participants

The subjects were 294 fourth and fifth grade students (52% female; 32% minority) in 98 three-person learning groups. Data were collected during the 1999-2000 school year, with the students distributed between three elementary schools in a metropolitan area in the Midwest. The elementary schools were in the same school district located in a largely White working-class community.

A subset of 18 students in 6 learning groups was randomly selected to be interviewed (44% female; 22% minority).

Procedures

Pre-test survey. Two weeks before the collaborative group task, researchers collected demographic and survey data from students, teachers, and the school. Student information, such as teacher-rated math ability, student ethnicity, and student gender, were obtained at this time. This information was used to form the compositions of the groups during the collaborative group task.

Collaborative group task. All students within their classroom were assigned to three-person groups. The triads were arranged into two gender compositions: majority-female groups and majority-male groups. Within the gender compositions, the triads were also arranged into three ability compositions: heterogeneous ability groups, homogeneous low-ability groups, and homogeneous high-ability groups. A lead researcher, two trained research assistants, and the classroom teacher were present during the collaborative group task.

The group task involved a math-related project where the goal was to determine the correct answer as a group. Students worked together for 30 minutes to plan a hypothetical field trip to Cedar Point Amusement Park with a budge of $50 to spend on breakfast, lunch, dinner, and fun activities. Each student in the triad had different information to plan the trip; hence, in order to successfully plan the field trip, the group members were required to share the information. For example, one student had information about various breakfast prices, another student had information on lunch prices, and the third student had information on dinner prices. One question asked how many possible ways the group can eat breakfast, lunch, and dinner for a total of $18. Each group completed one answer sheet, the "Trip Planner," on which the effort of

the group as a whole could be evaluated. The workability of the task was determined by previous pilot studies and followed the guidelines of mathematical problem solving for the 4th and 5th grade under the Curriculum and Evaluation Standards for School Mathematics (National Council of Teachers of Mathematics, 1989).

Post-test survey. Immediately following the group math task, the post-test survey was administered assessing self-perceptions of task- and relationship-focused emergent leadership and achievement motivations during the group task. After completing the post-test survey, students were debriefed about the nature of the study and were encouraged to ask the researchers questions about the math task or other parts of the research project. The students were given a small token of appreciation for their participation.

Post-test interview. After the completion of the post-test survey, a researcher individually interviewed selected students. The interview took place in a quiet area near the student's classroom, either in an adjacent empty classroom, hallway, or school library. Each interview lasted between 5 to 15 minutes. After the interview, the students were escorted back to their classroom. The interviews were audiotaped and transcribed. All interviews were carefully transcribed to capture the tone, intonation, and flow of the conversation. Therefore, grammatical errors and slang usages were included in the transcript. The interview data was the primary source of qualitative data collection.

Interview Questions

Because the students just finished a group math task and a post-test survey, the interview questions were designed to be short open-ended questions. There were six main interview questions:

1. What did you think about the math task?

2. Who participated the most?
3. Who participated the least?
4. Were you frustrated at times with your group?
5. Who would you nominate as a leader?
6. Would you work with your group again?

The interviewer followed a script to ensure consistency across the interviews. For each interview question, there were priming questions to help students answer the questions. Students were encouraged to give examples and elaborate on their answers.

Survey Measures

Emergent leadership. The leadership scales, task and relationship-focused leadership, were adapted from Stogdill's Leadership Behavior Descriptor Questionnaire (Stogdill, 1948, 1969; Stogdill & Coons, 1957). Self-assessed surveys were utilized in order to determine emergent leadership from children's own point of view. On a scale of 1 ("not at all true") to 5 ("very true"), task-focused leadership items asked students about their leadership behavior regarding the math task (four-item scale, $\alpha = .70$). Examples of task-focused leadership included items such as "I gave directions about how to do the math questions." and "I told my group members what should be done in the math questions." On a scale of 1 to 5, relationship-focused leadership items asked students about their leadership behavior regarding group cohesion (five-item scale, $\alpha = .81$). Examples of relationship-focused leadership included items such as "I tried to get everyone to work together." and "I encouraged all of us to work together as a team."

Personal achievement goals. The goal orientation survey items were adapted from the Patterns of Adaptive Learning Survey (PALS) (Midgley et al., 1997). Each item is on a 5-point scale (1=not at all true; 5=very true). Similar to the questions regarding emergent leadership, the

personal achievement goals were in relation to the collaborative math task. The post-test personal mastery goal orientation scale is a three-item scale ($\alpha = .82$), with items such as "It was important to me to learn a lot" and "My goal was to learn as much as I could." The post-test personal performance goal orientation scale is also a five-item scale ($\alpha = .86$), with items such as "It was important to me to look smart compared to others in my group" and "My goal was to look smart in comparison to the other students in my group."

Group composition. Female-majority, low-ability, and heterogeneous ability groups are dichotomous variables. For gender group composition, male-majority group is the comparison group. For ability group composition, high-ability group is the comparison group.

Analysis Strategy

In analyzing the interview data, grounded theory was initially used to understand how students conceptualize the emergence of leadership in a group setting. In coding and analyzing the transcripts, Glaser and Strauss's (1967) constant comparative method, also referred to as open coding (Strauss & Corbin, 1990), was used. Open coding is the process of breaking down, examining, comparing, conceptualizing, and categorizing data (Strauss & Corbin, 1990, p. 61). In the first phase of coding, each transcript was coded, or "chunked" (Miles & Huberman, 1984, 1994), into key phrases that students used, such as "talking the most", "doing the most calculations", and being "nice". After analyzing the behavioral themes, an etic categorization scheme was used following past research on emergent leadership behaviors, where behaviors were further refined into two categories: task-focused leadership and relationship-focused leadership.

In analyzing the survey data, multiple steps were also employed. In the first step, we ran descriptives and zero-order correlations. In the second step, we ran hierarchical linear models

(HLM) to address the nested nature of the data, where students are nested within groups (Bonito, 2002; Gonzalez & Griffin, 1997; Pollack, 1998). After reviewing the HLM results, the random effects, particularly that of the group-level variance, was not significant and near zero. In the third step, multiple regressions were conducted following the two research questions of the study. The results from the HLM fixed effects and the multiple regression results were very similar. Hence, the results section will focus on the regression results.

Results

How do children define and describe emergent leadership in a collaborative learning group setting?

Table 1 describes the students interviewed. Of the 18 students interviewed, only 17% of the students, or 3 out of 18 students, self-selected themselves as the emergent leader of their group. One student nominated herself as the leader, even though she admitted that another group member completed the math task by himself. Most students nominated the group member who participated the most as the emergent leader. Interestingly, all students, even those who clearly did not participate in the math task, insisted that they participated in the group math activity. Among the behaviors that the students described, two main categories emerged on how students conceptualize leadership: task-focused and relationship-focused.

For task-focused leadership, the students were clear that it included behaviors such as doing the most calculations, writing the most on the answer sheet, and doing the most work. In Group 4, Janice elected herself as the leader because "I did most of the work." Indeed, Jimmy a fellow group member states, "Janice is the leader because she's smart and all that stuff (pause), and she almost did all of it. She wrote everything down that we said, and she did problems, math problems and all that." When prompted what Jimmy and the other group member, Patrick, did

during the group activity, Jimmy replied, "We helped her with some problems and all that." Unfortunately, Janice and Patrick concur that Jimmy "didn't cooperate that much." According to Patrick, Jimmy "would just sit there and make fun of the dinner tickets, and make fun of everything." When asked if Janice was frustrated with Jimmy, she stated matter-of-factly, "No, that's what usually happens when I work in groups" and added that she usually ends up "doing all of the work." Janice was one of the three students who nominated herself as the emergent leader of the group.

In Group 2, Tom nominated Debbie as the leader because "she like, (pause) showed the work on the math and she like, (pause) wrote everything down." According to Debbie, she would also recheck the work of Chris, the third group member. She states, "Well, I mean, like, he may have gotten the answers, but I'd recheck it again, so, I'd like recheck it again and over again. And he would get the answers but I'd keep on rechecking it."

In Group 5, Aaron's group members nominated him as the leader, though all the members stated that they equally participated in the group activity. According to Louis, "Aaron did most of the work. He wrote and Yvonne wrote, and I wrote. We worked, um, taking turns together, adding up the answers to the problems."

For relationship-focused leadership, the students continually used the word "nice" to describe why they nominated a certain individual. When asked to explain what "nice" meant, Jessica, from Group 6, elaborated that Joe was the leader of her group because he was "not yelling, being mean and stuff like that, calling names." Of his fellow group members, Joe also explained the terminology of "nice" by giving an example, "Like, if I had the right answer and they didn't want that answer, they'd go, "NO!" And they'd write another answer down. They don't do that." Mary, the third group member, stated succinctly, "I think Jessica is the leader.

She like (pause) did a lot too. She wrote a lot, I wrote too. (But Jessica) says, 'We need to work as a group.' And so I think that's why she should be the leader."

Group 1 was a particularly dysfunctional group. Peter self-selected himself (reluctantly) as the leader and found the group "extremely" frustrating because "not everybody participated because Larry and Natalie really just goofed around for the most of it. And they didn't like, decide on one thing, so they argued a lot." Given this circumstance, Peter was left being the relationship-focused leader by "telling them, 'Would you please settle down and help me with this?'" Unfortunately, "they kept on bickering." Natalie and Larry agree that Peter did most of the work but continued to blame one another during the interview for "being annoying." Interestingly, Natalie also self-selected herself as the emergent leader of the group, even though she admitted that Peter did "the most work."

Group 3 insisted that everyone participated equally, though Summer and John agreed that Alice was the emergent leader. Summer nominated Alice as the leader because "I think she was best and she's really nice." Meaning, Alice often dictated the social "rules" of the group, such as taking turns. According to John, Alice suggested that each group member do two pages of the "Trip Planner."

Overall, during the interviews, the 4th and 5th grade students were not confused at the question of emergent leadership. All of the interviewed students were able to nominate a leader and explain what behaviors were attributed to leadership emergence. Similar to past studies with adults, students also conceptualized leadership into a task-focused and relationship-focused paradigm.

Are gender, achievement motivations, and group compositions associated with task-focused emergent leadership?

Table 2 describes the descriptive statistics from the student surveys. Of the 294 students surveyed, on average students reported that they somewhat emerged as task-focused leaders (M=2.67, SD=1.00) during the group math task. Table 3 shows the correlation matrix. Task-focused emergent leadership was correlated with relationship-focused emergent leadership (r=.425, p<.01), personal mastery goals (r=.122, p<.05), and personal performance goals (r=.433, p<.01). However, gender or group compositions did not have significant correlations with task-focused emergent leadership.

Table 4 shows the multiple regression results for task-focused emergent leadership. The multiple regression revealed a significant positive association with personal performance goals (B=.385, p<.001), but mastery goals was not a significant predictor. In addition, females had a significant positive relationship (B=336, p<.01), while low-ability group composition had a negative relationship (B=-.238, p<.05).

Are gender, achievement motivations, and group compositions associated with relationship-focused emergent leadership?

On average, students reported that they somewhat emerged as relationship-focused leaders (M=3.42, SD=1.04) during the group math task. Relationship-focused emergent leadership was correlated with personal mastery goals (r=.509, p<.01), and personal performance goals (r=.244, p<.01). However, gender or group compositions did not have significant correlations with relationship-focused emergent leadership.

Table 5 shows the multiple regression results for relationship-focused emergent leadership. The multiple regression showed a significant positive relationship with personal mastery goals (B=.491, p<.001), as well as personal performance goals (B=.133, p<.01). Gender and group compositions were not significant predictors, however.

Discussion

The purpose of this study was to explore how students conceptualize emergence of leadership, and to determine an association between self-perceptions of emergent leadership and achievement motivation. The interview data revealed that children are indeed aware of the emergence of leadership in collaborative learning groups. They described the emergence of leadership in two domains. The first domain focused on behaviors related to the completion of the math task, often referred to as task-focused leadership. Behaviors included writing answers on the "Trip Planner," doing the calculations, and sometimes rechecking the work of others. A second domain focused on being "nice" to the group members, often referred to as relationship-focused leadership. Behaviors included making the group members take turns, encouraging others to help and work together. As a combination of behaviors, task- and relationship-focused do seem to have an important role in the effectiveness of the group.

The survey data indicated that mastery and performance goal orientations are associated with self-perceptions of leadership. Task-focused leadership was only associated with performance goal orientations. As students have a stronger focus on social comparison and competition, students are more likely to exhibit task-focused leadership in a group setting. This association may be especially true in a classroom setting where students are required to complete a task within a given time period. Exhibiting task-focused leadership, such as telling other group members what to do on the math task, may be an efficient strategy to complete a group task. Hence, task-focused leadership may take on an especially important role in a time-constrained group project.

Relationship-focused leadership was associated with both mastery and performance goals, though the association was stronger in mastery goals. This, too, is an interesting finding in

that as students have a stronger focus on learning and improving in the group setting, students are more likely to exhibit relationship-focused leadership, such as encouraging other group members to work together. In order to effectively learn from peers, one must also know how to work with them. Slavin and his colleagues (1995) consider that working cooperatively with other students provides more learning opportunities from peers, and presumably more likely to communicate ideas, concepts and methods in readily understandable ways. This peer learning process may be especially true when students, motivated by learning and improving, emerge as relationship-focused leaders within their collaborative group.

While there was limitations to the study, such as studying collaborative groups at a single time point and one subject matter, this study found that not only are students aware of leadership emergence in learning groups, but achievement orientations are associated with self-perceptions of emergent leadership. To conclude, while teachers and researchers may have anecdotal evidence of emergent leadership among children, the concept of emergent leadership should be systematically studied in a collaborative learning setting to understand how to improve the peer learning process.

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Table 1

Descriptive Statistics

Group ID	Group Members	Grade	Teacher-rated Ability	Ethnicity	Leader Nomination
Group 1	Natalie	4th	Low	African American	Self
	Larry		High	Caucasion	Self
	Peter		Mid-Low	Caucasian	Larry
Group 2	Debbie	5th	Low	Caucasion	Chris
	Tom		Low	Caucasion	Debbie
	Chris		Mid-Low	African American	Tom
Group 3	Alice	4th	Mid-High	Caucasion	Summer and John
	Summer		Mid-High	Caucasion	Alice
	John		Mid-High	Caucasion	Alice
Group 4	Janice	5th	Mid-Low	Caucasion	Self
	Patrick		Mid-Low	Caucasion	Janice
	Jimmy		Mid-Low	Hispanic	Janice
Group 5	Lloyd	4th	Mid-High	Caucasion	Yvonne
	Yvonne		Mid-High	Caucasion	Lloyd
	Louis		Mid-High	African Ameircan	Lloyd
Group 6	Joe	5th	Mid-Low	Caucasion	Jessica
	Mary		Low	Caucasion	Joe
	Jessica		Low	Caucasion	Mary

Note: Pseudonyms are used to insure confidentiality. Teacher-rated ability ranged from Low, Mid-Low, Mid-High, and High ability.

Table 2

Descriptive statistics of survey data (N=294)

	Mean	SD	Range
Task Leadership	2.67	1.00	1-5
Relationship Leadership	3.42	1.04	1-5
Female	.52	.50	0-1
Female-majority	.55	.50	0-1
Low-ability	.38	.49	0-1
Mixed-ability	.47	.50	0-1
Mastery Goals	3.99	1.00	1-5
Performance Goals	2.23	1.15	1-5

Table 3

Correlations of survey data (N=294)

	1	2	3	4	5	6	7	8
Task Leadership	--	.425**	.122*	.433**	.087	-.107	.018	.035
Relationship Leadership		--	.509**	.244**	.082	-.054	.103	.147*
Mastery			--	.208**	.004	-.178**	.093	.097
Performance				--	-.096	-.100	.146*	.066
Female					--	.332**	-.010	-.009
Female-Majority						--	-.030	-.026
Low-ability							--	.082
Mixed-ability								--

Note: * p<.05, ** p<.01, *** p<.001

Table 4

Multiple Regression results for Task-focused emergent leadership

	Coefficient	se
Intercept	1.736***	.246
Mastery	.001	.054
Performance	.385***	.047
Female	.336**	.111
Mixed-ability	.000	.106
Low-ability	-.238*	.113
Female-majority	.000	.109
R^2	.219	

Note: * p<.05, ** p<.01, *** p<.001

Table 5

Multiple Regression for Relationship-focused emergent leadership

	Coefficient	se
Intercept	0.928***	.246
Mastery	.491***	.053
Performance	.133**	.046
Female	.192	.109
Mixed-ability	.180	.104
Low-ability	.004	.111
Female-majority	.008	.107
R^2	.304	

Note: * p<.05, ** p<.01, *** p<.001

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